

In the Claims:

- 1 16. (New) --An apparatus comprising:
 - 2 an analog photocell;
 - 3 a sample and hold amplifier, a first input to the sample and hold amplifier being a charge from the analog photocell, a second input to the sample and hold amplifier being a reference voltage; and
 - 4
 - 5
 - 6 an analog to digital converter, the analog to digital converter converting the output of the sample and hold amplifier to a digital value.--
 - 7
- 1 17. (New) --The apparatus of claim 16, wherein the sample and hold amplifier produces a scaled version of the voltage output of the analog photocell.--
- 1 18. (New) --The apparatus of claim 17, wherein the sample and hold amplifier matches the dynamic ranges of the analog photocell and the analog to digital converter.--
- 1 19. (New) --The apparatus of claim 17, wherein the sample and hold amplifier modifies the dynamic range of the analog photocell based, at least in part, on ambient light conditions.--
- 1 20. (New) --The apparatus of claim 16, wherein the analog to digital converter comprises:
 - 2 a voltage controlled oscillator, an input of the voltage controller oscillator being a
 - 3 output from the sample and hold amplifier; and
 - 4

5 a counter, the counter being driven by an output of the voltage controlled
6 oscillator.--

1 21. (New) --The apparatus of claim 20, further comprising a memory, the memory
2 storing an output of the counter.--

1 22. (New) --The apparatus of claim 21, wherein counter is reset after a certain period
2 of time.--

1 23. (New) --The apparatus of claim 22, wherein the period of time is an integration
2 time for the analog photocell.--

1 24. (New) --A method comprising:
2 inputting a charge of a analog photocell to a sample and hold amplifier;
3 inputting a reference voltage to the sample and hold amplifier;
4 converting an output of the sample and hold amplifier to a digital value.--

1 25. (New) --The method of claim 24, further comprising:
2 modifying the scale of the analog photocell charge using the sample and hold
3 amplifier.--

1 26. (New) --The method of claim 25, wherein the sample and hold amplifier matches
2 a dynamic range of the analog photocell to a dynamic range appropriate for
3 converting the output of the sample and hold amplifier to a digital value.--

1 27. (New) --The method of claim 25, a dynamic range of the analog photocell is
2 modified based, at least in part, on ambient light conditions.--

1 28. (New) --The method of claim 24, wherein converting the output of the sample
2 and hold amplifier to a digital value comprises:
3 applying an output of the sample and hold amplifier to a voltage controlled
4 oscillator; and
5 driving a counter using the output of the voltage controlled oscillator.--

1 29. (New) --The method of claim 28, wherein a count from the counter is
2 proportional to the intensity of light on the analog photocell during a previous
3 integration time period for the photocell.--

1 30. (New) --The method of claim 29, further comprising storing a count from the
2 counter in a register.--

1 31. (New) --The method of claim 30, further comprising resetting the counter after
2 the passage of the integration time period for the photocell.--

1 32. (New) --An digital photocell comprising:
2 an analog photocell;
3 a sample and hold amplifier, a first input of the sample and hold amplifier being
4 an output of the analog photocell and a second input of the sample and
5 hold amplifier being a reference voltage;
6 a voltage controlled oscillator, an input to the voltage controlled oscillator being
7 an output of the sample and hold amplifier;
8 a counter, a speed at which the counter operates being controlled by an output of
9 the voltage controlled oscillator; and

10 a register, the register storing an output of the counter.--

1 33. (New) --The digital photocell of claim 32, wherein the counter counts for a
2 specified time period and wherein the counter is reset at the end of the time
3 period.--

1 34. (New) --The digital photocell of claim 32, wherein the time period is an
2 integration time period for the analog photocell.--

1 35. (New) --The digital photocell of claim 34, wherein the output stored in the
2 register is a digital value that reflects an intensity of light incident on the analog
3 during the previous integration time period.--

1 36. (New) --The digital photocell of claim 32, wherein the digital photocell is
2 included in a pixel array.--

1 37. (New) --The digital photocell of claim 32, wherein the sample and hold amplifier
2 scales the input to the voltage controlled oscillator.--

1 38. (New) --The digital photocell of claim 37, wherein the input to the voltage
2 controlled oscillator is scaled based at least in part on ambient light levels.--

1 39. (New) --A method comprising:
2 applying a voltage of a analog photocell as a first input to a sample and hold
3 amplifier;
4 applying a reference voltage as a second input to the sample and hold amplifier;

5 applying an output of the sample and hold amplifier to a voltage controlled
6 oscillator;
7 driving a counter with the output of the voltage controlled oscillator;
8 saving a count from the counter; and
9 resetting the counter at the conclusion of a time period.--

1 40. (New) --The method of claim 39, wherein the time period is an integration period
2 of the analog photocell.--

1 41. (New) --The method of claim 39, wherein the count from the counter is saved in
2 a register.--

1 42. (New) --The method of claim 39, wherein the count from the counter is
2 proportional to intensity of light incident on the analog photocell.--